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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/456,531	12/08/1999	SHIGEO OHSAKA	991387	6582

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EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 03/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/456,531

Applicant(s)

OHSAKA ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 24 January 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.


Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____


Paul Ip
Primary Examiner

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DETAILED ACTION

Response to Amendment

In response to Amendment B filed 24 January 2002 claims 13-16 have been amended and claims 17-18 cancelled. Claims 1-16 are pending.

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 24 January 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

The Patent and Trademark Office no longer makes drawing changes. See 1017 O.G. 4. It is applicant's responsibility to ensure that the drawings are corrected. Corrections must be made in accordance with the instructions below.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. **Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. **Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

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All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.185(a). Failure to take corrective action within the set (or extended) period will result in **ABANDONMENT** of the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazue (previously cited JP 11-68253) in view Takemura (previously cited JP 4-98841), and further in view of Misawa (previously cited US 6,150,725).

Regarding claims 1-6 and 13-14, Kazue discloses an electrode structure where a conductive film is formed on a substrate through an insulating film. The insulating film is a polyimide layer. The electrode structure is disclosed to be part of a semiconductor light-emitting device, specifically one comprising a waveguide disposed between upper and lower electrodes. It is not disclosed that the film be a plurality of poles with a harder

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insulating film on the insides of the poles, and a second polyimide film buried among the poles. It is not disclosed that the harder film is also on the upper surfaces of the poles.

Takemura teaches a semiconductor device that includes two dielectrics (i.e. insulators) that are disposed as poles in a layer under a conducting film. It would have been obvious to one skilled in the art to include the insulators in pole form to help prevent the spreading components in the lateral direction and therefore lessen the capacitance between the buried layers and the semiconductor layers, as taught by Takemura.

Now that it has been shown that the use of poles is obvious, it has not been disclosed to include the hard layer as mentioned above. Misawa teaches a semiconductor device where parts are protected by a hard layer 120 and an insulating polyimide layer 121. The layer 120 is strong and insulating for blocking moisture and contaminants and the layer 121 is for flattening (col. 5 line 35 – col. 6 line 24; col. 9 lines 54-57). It would be advantageous to protect any part of the semiconductor device that is below the surface, and it would be advantageous to flatten out the layer for proper layering of the conductive layer, therefore it would have been obvious to one skilled in the art to include the hard silicon nitride layer and the second polyimide layer, as taught by Misawa.

Regarding claims 7-8, it is not disclosed that the conductive film be formed on the insulation film through a third insulation film. It would have been an obvious duplication of parts to include another insulation layer between the conductive film and the first insulation layer. A second insulation layer disposed between the layers is already

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included, and it would have been obvious to one skilled in the art that including an extra layer will simply increase the effects of using only the second layer.

Regarding claims 9-10, it is not disclosed that the conductive film should be a bonding pad. Takemura shows a semiconductor device with a conductive film on top, the conductive film being a bonding pad. Since a bonding pad is simply a type of conducting film, it would have been an obvious art known substitution to use a bonding pad as the conducting film.

Regarding claims 11-12, it is not disclosed that the insulating layer is formed on top of a harder layer that is formed on the substrate. Misawa teaches that the parts that are surrounded by the hard layer 120 as shown above are also formed on top of a layer of silicon nitride 109 (col. 5 lines 14-24). It would have been obvious to one skilled in the art to form the insulating layer of the present invention on top of a harder layer in order to surround the insulating layer with hard layers 120 and 109 to fully protect the insulating layer.

Regarding claims 15-16, it is not disclosed that the semiconductor laser include a high resistance layer formed on the side of the waveguide with the upper electrode formed on top of this layer. Examiner takes Official Notice that it would have been well known in the art to include a high resistance layer on the side of the waveguide and under the upper electrode. These high resistance layers are often included in semiconductor lasers in order to confine the current in the laser to go through only a small active region, therefore it would have been obvious to one skilled in the art to include this layer to confine the current, as is well known.

Response to Arguments

Applicant's arguments filed 24 January 2002 have been fully considered but they are not persuasive. Applicant argues that Takemura does not teach poles, and therefore the combination of references does not teach or suggest the claimed invention. The applicant states, "The polysilicon film 20 of Takemura is not buried in holes, but rather deposited to fill trench 19. Thus, the polysilicon 20 of Takemura does not comprise poles." The examiner notes that the method of forming a device is not germane to the patentability of the device itself. It does not matter if the polysilicon is "deposited in trenches" rather than "buried in holes". The final product is a plurality of long upright layers that may be interpreted as poles.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JM
March 12, 2002


Paul Ip
Primary Examiner